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ABSTRACT

While researchers have made progress in understanding metaphor comprehension, less is known about the production of metaphoric language. College students (N=129) were asked to use metaphoric comparisons to describe 16 topics. They were told to imagine themselves on a trip, writing home to someone they knew well, either a peer or a child (students who complied with the instructions numbered 114). The medium of topic presentation (pictorial, verbal or both) was varied across groups to test hypotheses regarding the role of perceptual information in metaphor production. After writing the comparisons, students were asked to rate each on difficulty and satisfaction. The results indicated that subjects provided with pictorial information rated the items as less difficult than those provided only with a verbal vignette. For subjects in the vignette condition, human and animal topics proved less difficult than plant and animal topics. The ordering was reversed for subjects provided with pictorial information. Satisfaction ratings were influenced by the communicative target; students instructed to write to peers were more satisfied than those instructed to address children. Further, students were more satisfied with comparisons written about objects and plants than with those written about humans and animals. These results provide some support for the view that perceptual information is important in figurative language production. (Author/ABL)

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Perceptual Information and Communicative Context in Metaphor Production

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Abstract

College students were asked to use metaphoric comparisons to describe 16 topics. They were told to imagine themselves on a trip, writing home to someone they knew well, either a peer or a child. The medium of topic presentation (pictorial, verbal or both) was varied across groups to test hypotheses regarding the role of perceptual information in metaphor production. After writing the comparisons, students were asked to rate each on difficulty and satisfaction. Subjects provided with pictorial information rated the items as less difficult than those provided only with a verbal vignette. For subjects in the vignette condition, human and animal topics proved less difficult than plant and animal topics. The ordering was reversed for subjects provided with pictorial information. Satisfaction ratings were influenced by the communicative target. Students instructed to write to peers were more satisfied than those instructed to address children. Further, students were more satisfied with comparisons written about objects and plants than with those written about humans and animals. Results provided some support for the view that perceptual information is important in figurative language production. The importance of providing a communicative context for studies of language production is discussed.

Perceptual Information and Communicative Competence in Metaphor Production

In the last ten years, developmental and experimental psychologists have made real progress in understanding metaphor comprehension. The developmental course of comprehension has been well charted (e.g., Pollio, Barlow, Fine and Pollio, 1977; Vosniadou and Ortony, 1984; Winner, Rosenstiel and Gardner, 1978) and several researchers have presented us with formal models of the comprehension process (Gentner, 1983; Ortony, 1979; Tourangeau & Sternberg, 1981). Yet we know much less about what may be the more interesting aspect of metaphoric thinking -- the production of metaphoric language. It is the in the production of metaphor that its potential for creative synthesis becomes apparent.

The paucity of data on metaphoric production may reflect methodological problems. Studies of spontaneous production such as those by Pollio et al., who have looked at spontaneous production in essays, psychotherapy sessions and political speeches, are perhaps the most interesting and ecologically valid. However, the rate of spontaneous metaphor production is rather low, necessitating a large corpus of language. Such studies are expensive. Furthermore, the manipulation of relevant variables is often difficult in these situations. On the other hand, laboratory studies which employ structured tasks to elicit figurative language also have drawbacks: Tasks are often not

appropriate for older samples and subjects are frequently provided with little or no context for the production of figurative language. The present study represented an attempt to develop a paradigm suitable for the study of figurative language production in a context more enriched than those employed in previous experimental studies.

Communicative situations where metaphors might be produced spontaneously have several characteristics that are typically absent in laboratory studies of production. Speakers usually have a base of knowledge about their topic, they have a particular audience in mind, and they have a purpose or goal which leads them to produce the metaphoric utterance. In laboratory studies of production, the topic is often only vaguely specified, and the audience not specified at all. In terms of purpose, the subject is more likely to be focused on performing well for the experimenter than on communicating an idea.

In the present study, topic familiarity was addressed by providing subjects with some information about a specific instantiation of the topic. The means of presenting this information varied across groups. Gestaltists and Gibsonians alike have argued that metaphor has its roots in perceptual experience. Gestaltists have suggested that there are structural parallels across sensory domains which make metaphoric

linkages possible. These psychologists point to findings like Asch's (1958), that many metaphors are preserved across languages. More recently, researchers such as Dent (1984) and Verbrugge (1980), who have been influenced by Gibson's work in visual perception, have argued that the apprehension of a metaphoric relation involves the perception of identical transformations across different stimulus fields.

If these perceptually oriented views are correct, then metaphor production should be facilitated by exposure to a perceptually rich stimulus. This was investigated in the present study by comparing the production of metaphors in response to pictorial stimuli to those produced in response to brief vignettes. A third condition, using pictures accompanied by vignettes was also included. It was expected that more metaphors would be produced in conditions employing pictures, and that subjects would judge it easier to produce in these conditions. We also expected that the subjects would be more satisfied with their own productions, when these were written in response to pictures. In order to test the latter two predictions, we had subjects rate their own productions, after writing them.

Metaphoric language, like any other form of language, is a communicative device. Like other forms of communication, it requires not only a topic and something to say about that topic, but an audience. In previous laboratory studies of production, the

experimenter, a stranger, presumably has been the implicit audience. Yet metaphor works by drawing upon the shared associations of speaker/writer and listener/reader. A familiar communicative audience may be particularly critical for the study of metaphor production. Some support for this notion comes from a recent study (Ward & Connor, 1985). We compared rates of spontaneous figurative language production in eighth graders' compositions in response to two essay topics. One topic (suggested by an experienced elementary school teacher) asked students to write about "The One Person I'd Like to Be...". Another topic asked students to pretend they were being interviewed for 60 Minutes on their recent exploration of the Planet Ziron, and to describe their experiences. The rate of production was significantly higher in relation to the latter topic; the former topic produced almost no instances of figurative language, despite greater topic familiarity. We suspect that the specification of a communicative purpose and a target audience contributed to the higher rate of figurative production in the Planet Ziron essay.

In the present study, we asked subjects to imagine a communicative purpose and a target audience. We asked them to imagine themselves on a trip writing home to someone they knew well -- they were asked to select one specific individual and to keep the same individual in mind throughout the task. In order to further explore

the impact of the target audience on metaphor production, some subjects were asked to select a friend their own age as the imaginary letter recipient, others were asked to select a child between the ages of five and ten. If the audience makes a difference, then we would expect that writing to a child would be somewhat more difficult task, and the outcome less satisfying.

The purposes of the present study were twofold, then. First, we were interested in developing a paradigm for the experimental study of metaphor production in older samples that provided the subject with somewhat richer information about the topic, the audience and the purpose than has been the case in previous laboratory studies of production. Our second goal was to investigate the impact of certain factors on subjects reports' regarding the difficulty of producing figurative language and their satisfaction with their own productions.

Subjects in this preliminary study were young adults, freshmen and sophomore college students participating for course credit in an Introductory Psychology course. They were presented with stimulus materials -- pictures, vignettes or both -- and asked to write descriptions of the presented material. In order to elicit higher levels of figurative language production than are typically found in studies of spontaneous production, subjects were asked explicitly to use figurative comparisons in their descriptions.

A total of sixteen topics were presented to the students for description. In order to insure a broad range of topics, four were selected from each of the categories of people, animals, plants and objects. Pictorial materials were drawn from items in the Metaphoric Triads Task (Kogan, Connor, Gross & Fava, 1980). These pictures, which were designed to suggest metaphoric relations, are rich in expressive qualities; they were chosen for the present study in order to facilitate metaphor production. For each picture selected as a topic for the present study, a vignette 75 to 100 words in length was prepared. Vignettes were designed to suggest events that might occur on a trip. A sample picture and vignette pair appears in Figure 1. Pictures, vignettes or pictures plus vignettes were assembled in booklets in one of two random orders.

Subjects were tested in small groups. After a brief introduction to metaphor, subjects read instructions regarding the target audience, and then proceeded at their own pace through the booklet, writing a description for each of the 16 topics. After the last topic page, subjects found instructions regarding the rating procedure. They were asked to go back through their own productions, one at a time and in the order in which they wrote them, and rate each on two seven-point scales, one pertaining to how difficult they found it to write a description for each item, and the other asking

them how satisfied they were with what they wrote for that item. At the end of the rating procedure, they were asked whether in fact they had had a specific target in mind, and the age and sex of the target.

A total of 129 college students were tested. One hundred fourteen of them, about 88%, reported having followed the instructions and directed their writing to a specific individual of the appropriate age. Analyses of the rating data were limited to the 114 "cooperators". Medium of Topic Presentation by Communicative Target by Topic Category analyses of variance were performed on the difficulty and satisfaction ratings for these subjects. The descriptions themselves were also coded in terms of whether a metaphor was produced or not.

Consider first the effects of medium of presentation: Hypotheses regarding the facilitating effects of pictorial information received some support with respect to difficulty ratings, but not with respect to satisfaction. For difficulty ratings, the main effect of Medium was of borderline significance, $F(2,104)=2.98$, $p=.05$, and was embedded in a significant interaction with Topic Category, $F(6,312)=3.07$, $p < .01$. This interaction is displayed in Figure 2. Subjects in the Picture and Picture-plus-Vignette conditions indicated less difficulty in writing their descriptions than subjects in the Vignette only condition, as expected, but only for topics in the plant

and object categories. The ratings for humans and animals were virtually identical in all three groups. It may be that the kind of perceptual information relevant to topics in the plant and object categories can be adequately conveyed by pictures, while the relevant perceptual qualities of animate topics in the human and animal categories are not salient in static pictures. Perhaps motion pictures of the type used by Dent (1984) would make writing descriptions easier for these topics as well. Alternatively, when writing about people and animals, subjects may focus on behaviors and qualities of a "psychological" type. For these description, visual information may simply not be as important.

Subjects' descriptions were coded as metaphoric, as literal comparisons or as noncomparative descriptions. We had expected that the two pictorial conditions would yield more metaphoric comparisons that the vignette only condition. The results were somewhat more complicated. The Picture-plus-Vignette condition yielded the highest percentage of metaphoric comparisons -- approximately 83% of the responses could be classified this way, while in the Vignette condition, about 78% of the responses could be considered metaphoric descriptions. To our surprise, though, only 58% of the responses in the Picture condition were metaphoric. In fact, about 30% of the responses in this category were judged to be

noncomparative descriptions. We have speculated that subjects presented only with a picture may need to provide themselves with a verbal description not unlike our vignette before being able to find an appropriate metaphor to express what they have experienced visually. Given the constraints of the experimental situation, it seems that subjects in this condition frequently did not get to the second stage, the stage of metaphor production.

To summarize the findings with respect to medium of presentation, then, subjects reported that it is easier to produce descriptions of inanimate objects when there was pictorial information present. They produced more metaphoric comparisons, however, when there was verbal, descriptive information available, as well. Clearly, of course, the data suggests that the presence of both pictorial and verbal contextual information is optimal.

Consider now our expectations regarding communicative target. We had suggested that our college students would find it easier to write for peers than for children, and would report higher satisfaction levels for peers as well. Our expectations regarding difficulty were not born out; there was no effect of communicative target in the analysis of difficulty ratings. Congruent with this finding was the fact that there was relatively little difference in the percentages of metaphoric descriptions actually produced in the two conditions: We found that 74% of those

directed toward adults and 77% of those directed toward children were considered metaphoric.

The pattern of results for students' ratings of their own satisfaction with their productions was somewhat different. As expected, subjects writing for same-aged peers reported higher satisfaction levels than subjects writing for children subjects writing for same-aged peers reported higher satisfaction levels than subjects writing for children, $F(1, 102)=6.15$, $p = .015$. This may mean one of two things: Students may have been dissatisfied with with their description as communicative vehicles -- in other words, they may have felt that they did not succeed in conveying their imagined experience in a way that children would understand. Or perhaps they were satisfied with the appropriateness for children of what they wrote, but judged these descriptions to be less satisfactory from their own point of view -- that of an adult. An answer to this question will require a different kind of rating task than the one employed.

Topic category also proved to have a strong and significant impact on all variables. Of course, the impact of topic category on reported difficulty can only be considered in the context of its interaction with medium of presentation. Plant and object topics were rated as more difficult than humans and animals, but only when no pictorial information was provided; when

the pictures were presented plants and objects were in fact easier. With respect to the satisfaction scores, plants and objects produced more reported satisfaction than human and animal topics, although the differences were quite small. Plant topics produced the highest percentage of metaphoric descriptions (84%), while human topics produced the lowest percentage (63.2%).

To summarize the results of the present study, we found some support for the notion that where inanimate objects are concerned, subjects report less difficulty in producing a verbal metaphor when they have direct perceptual experience of the topic. However, we found that direct perceptual experience unaccompanied by verbal description caused a large proportion of our subjects to write literal descriptions, rather than the metaphoric comparisons we had asked for. We also found that subjects reported greater satisfaction with their products when those products were directed toward peers rather than toward children. Finally, we found that the nature of the topic will influence the writing process: Subjects report greater satisfaction when writing about plants and objects, and also report these to be easier topics to write about, at least when pictorial information is presented. That we found effects of communicative target on satisfaction ratings provides some support for our hunch that the target audience is an important factor which must be taken into account in studying metaphoric language production.

In this research, we have been examining the ways in which medium of presentation, communicative target and topic category influence subjects' own reports about the production process. The next important step is see how these variables influence the product of the production process, from the viewpoint of an independent judge. Influenced by Amabile's work (1982), we are now in the process of having metaphoric productions evaluated by judges for this purpose.

In addition to these specific findings, we believe that the present study has provided us with some encouragement that it will be possible to study metaphor production in the context of a structured task that nonetheless retains important aspects of realistic situations in which metaphors are produced. We believe that this paradigm can be adapted to study a range of variables that may influence the production process, and to study them across a rather broad portion of the lifespan, -- from middle childhood through adulthood.

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Figure 1

You are visiting the world-famous Bronx Zoo. One of the most interesting displays is the one featuring snakes in naturalistic habitats. One big yellowish-green one catches your eye. You are particularly struck by the way it moves -- coiling and uncoiling its long body, then slithering through the grass.

Describe the snake.

Figure 2

Medium by Topic Category Interaction

Difficulty Ratings